

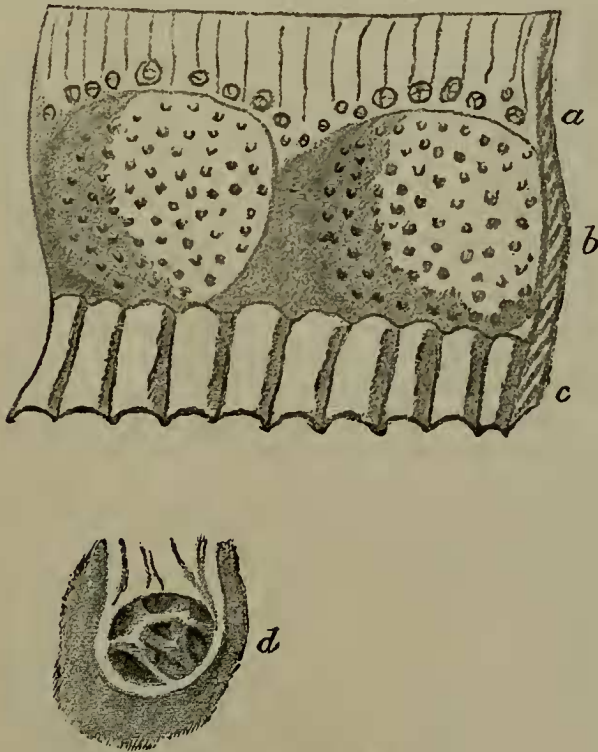
5. On the Proventricular Crypts of *Pseudotantalus ibis*.

By P. CHALMERS MITCHELL, M.A., F.Z.S.

[Received March 19, 1895.]

(Plate XVII.)

While dissecting a specimen of *Pseudotantalus ibis*, the African Tantalus, kindly placed at my disposal by the Society's Prosector, I found a set of peculiar structures in the proventriculus which were new to me and of which I could find no description. The general shape of the stomach is similar to that of *Leptoptilus crumeniferus* and *L. argala* and of *Carphibis spinicollis*. The gizzard is capacious and thin-walled, although tendinous in certain areas. The proventriculus is narrower than the gizzard. Upon opening it one sees that the horny lining of the gizzard ends abruptly in the proventriculus, the internal surface of the latter being smooth. In the four birds mentioned, the proventricular glands are not scattered all over the surface of the proventriculus, but are arranged over two very well-defined and nearly circular areas. The inner surface of these areas is studded with the large

Proventricular Crypts of *Pseudotantalus ibis*.

The upper figure represents the proventriculus and a small portion of the gizzard laid open. *a* is placed opposite the row of crypts, *b* opposite the glandular areas, *c* opposite the beginning of the gizzard, lined by the corrugated secreted membrance. *d* is an enlarged view of a single crypt.

and conspicuous apertures of the glands, and the two circular areas form thick pads that may be seen and felt from the outside before the stomach is opened. The figure in the text (p. 271) represents the proventriculus laid open, with the two circular areas conspicuous opposite the reference letter *b*. Above these, in the African Tantalus, is a single irregular row of pits, of different sizes and about twenty in number. In the figure the row is shown opposite the reference letter *a*, and at *d* an enlarged view of one of them is given. There is no trace of these pits or crypts in the other birds with similar proventriculus that I have examined. Each crypt is a shallow circular or oval pit, the margin of which is slightly elevated. From the floor of the crypt rise a system of crescentic folds of different sizes.

As the bird was tolerably fresh when I examined its intestine, I prepared microscopic sections through one of the crypts. The drawing (Plate XVII. fig. 1) represents one of these seen under a low power. *e*, *f*, and *g* are placed opposite the ends of the crescentic folds, the letter *g* being placed within the cavity of the crypt. The surface of these folds is set thickly with a number of small villi, and these are continued over the raised margin of the wall of the crypt. Fig. 2 represents some of these villi seen under higher magnification.

The whole of the pit is lined by an epithelium continuous with that lining the general surface of the proventriculus (fig. 1, *ep*, fig. 2, *ep*, *k* & *m*). Over the general surface this is an ordinary columnar epithelium, but here and there between the villi, as at *m*, it becomes glandular. At fig. 2, *k*, two of these glandular infoldings are seen in cross-section. Immediately under the epithelium seen at *a*, in fig. 1, and forming the solid mass in fig. 2, is a dense connective-tissue layer. This contains fibres and cells, and here and there capillaries and absorbents. This layer forms the greater part of the villi and lies next to the epithelium on the summits of the crescentic folds. But further down, in the cavity of the crypt, masses of lymphatic tissue (fig. 1, *c*) lie between the connective tissue and the epithelium. Here and there bands of connective tissue invade the masses of lymphatic cells and separate islands of them from the main mass. This layer of lymphatic tissue was the most conspicuous part of the sections, and as in some of them the epithelium had been destroyed it closely resembled a granular cuticular layer.

Under the connective-tissue layer was a thicker layer consisting of a loose stroma containing fibres, connective-tissue cells, and blood-vessels.

The deeper part of the section (fig. 1) passed through some of the follicles of the proventricular glands. Each of these was surrounded in the ordinary way by a capsule of connective tissue. I confess that I am unable to form any clear conception as to the function of these crypts. It is possible that they may serve for the absorption of water or of fluids. From the position of the stomach in the body, these crypts must lie very little above the level of the

pylorus, and when the pyloric valve is closed and the gizzard filled with masses of food in process of digestion, any water swallowed could easily be absorbed by the crypts. Moreover the unusually large pyloric glands must require an abundant supply of water. However, this suggestion is of the most vaguely theoretical kind.

EXPLANATION OF PLATE XVII.

- Fig. 1. Cross section through a single crypt (low power). *ep.* Epithelium.
a. Dense connective-tissue layer. *b.* Connective-tissue stroma with blood-vessels. *c.* Lymphatic tissue. *d.* Proventricular glands.
e, f, g. Crescentic folds of the crypt in cross-section.
- Fig. 2. Enlarged view of part of surface of one of the crescentic folds in section. *ep.* Epithelium, becoming glandular at *m.* *k.* Glandular infolding of the epithelium in cross-section. *a.* Connective-tissue layer.

April 2, 1895.

W. T. BLANFORD, Esq., F.R.S., Vice-President, in the Chair.

The Acting Secretary read the following report on the additions to the Society's Menagerie during the month of March 1895:—

The registered additions to the Society's Menagerie during the month of March were 83 in number. Of these 50 were acquired by presentation, 20 by purchase, 4 were born in the Gardens, and 9 were received on deposit. The total number of departures during the same period, by death and removals, was 109.

Amongst these special attention was called to a Brazilian Three-banded Armadillo (*Tolypeutes tricinctus*), obtained by purchase March 29.

The Acting Secretary, Mr. Howard Saunders, exhibited on behalf of Lord Lilford a specimen of the American Wigeon (*Mareca americana*), lately obtained by Sir Ralph Payne-Gallwey, Bart. The bird, which proved on dissection to be a female, was found hanging up in the shop of a Mr. Murray, game-dealer at Leeds, with a lot of Common Wigeon, and had every appearance of having been freshly killed. This was the only existing authenticated specimen obtained in England since Mr. Bartlett purchased in the London market, in the winter of 1837–38, the example now in the collection of Mr. J. H. Gurney, of Keswick Hall, Norwich. Mr. Saunders called attention to the fact that a specimen, shot at Crotoy, mouth of the Somme, N. France, in April 1875, is or was in the collection of M. Marmottan, of Paris.

Mr. Boulenger exhibited specimens of two recently discovered Chameleons from Usambara, German East Africa, which had been

sent to the British Museum by Dr. F. Werner, viz. *Chamæleon fischeri*, Reichenow, and *Ch. spinosus*, Matschie. Special interest attached to these species from the fact that they appeared to be more nearly related to the Madagascar species *Ch. bifidus* and *Ch. nasutus* than to any of the numerous forms previously known from Continental Africa.

The following papers were read:—

1. On the Sensory Canal System of Fishes. *Teleostei*—Suborder A. *Physostomi*. By WALTER EDWARD COLLINGE, F.Z.S., Assistant Lecturer and Demonstrator in Zoology and Comparative Anatomy, Mason College, Birmingham.

[Received March 11, 1895.]

(Plates XVIII.–XXI.)

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I. INTRODUCTORY.

The system of sensory canals in the Teleostean fishes exhibits so many features of interest both as regards the morphology and histology, and the relations of the cranial nerves to the canals, that it will not be possible to here treat of more than a single sub-order, viz. the Physostomi. The system has been carefully worked out in a number of genera and the most interesting species